South Fork Coeur d'Alene River Sediment Subbasin Assessment and Total Maximum Daily Load

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Abbreviations, Acronyms, and Symbols

303(d) Refers to section 303 subsection (d) of the Clean Water Act, or a list of impaired water bodies required by this section

ì micro, one-one thousandth

§ Section (usually a section of federal or state rules or statutes)

AWS agricultural water supply

BLM United States Bureau of Land Management

BMP best management practice

BURP Beneficial Use Reconnaissance Program

C Celsius

CAC Coeur d'Alene Basin Citizens' Advisory Committee

CERCLA Comprehensive Environmental Response, Compensation and Liability Act

CFR Code of Federal Regulations (refers to citations in the federal administrative rules)

cfs cubic feet per second

cm centimeters

CW cold water

CWA Clean Water Act

CWE cumulative watershed effects

DEQ Idaho Department of Environmental Quality

EPA United States Environmental Protection Agency

F Fahrenheit

FPA Idaho Forest Practices Act

GIS Geographical Information Systems

HI habitat index

HUC Hydrologic Unit Code

I.C. Idaho Code

IDAPA Refers to citations of Idaho administrative rules

IDFG Idaho Department of Fish and Game

IDL Idaho Department of Lands

LA load allocation

LC load capacity

LOD large organic debris

m^2 square meter

mi mile

mi^2 square miles

MBI macroinvertebrate index

mg/l milligrams per liter

mm millimeter

MOS margin of safety

NA not assessed

NB natural background

nd no data (data not available)

PCR primary contact recreation

ppm part(s) per million

NPDES National Pollutant Discharge Elimination System

NRCS Natural Resources Conservation Service

QA quality assurance

QC quality control

RASI riffle armor stability index

SCR secondary contact recreation

SS salmonid spawning

STATSGO State Soil Geographic Database

TMDL total maximum daily load

t/y tons per year

U.S. United States

USC United States Code

USFS United States Forest Service

USGS United States Geological Survey

WBID Water body identification number

WLA waste load allocation

Executive Summary

The federal Clean Water Act (CWA) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters (33 USC § 1251.101). States and tribes, pursuant to section 303 of the CWA are to adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible. Section 303(d) of the CWA establishes requirements for states and tribes to identify and prioritize water bodies that are water quality limited (i.e., water bodies that do not meet water quality standards). States and tribes must periodically publish a priority list of impaired waters, currently every two years. For waters identified on this list, states and tribes must develop a total maximum daily load (TMDL) for the pollutants, set at a level to achieve water quality standards. This document addresses the water bodies in the South Fork Coeur d'Alene Subbasin that have been placed on what is known as the "303(d) list" for sediment. Those water bodies listed for metals have been addressed by the "Coeur d'Alene Basin Metals TMDL (DEQ-EPA 2000).

This subbasin assessment and TMDL analysis has been developed to comply with Idaho's TMDL schedule. This assessment describes the physical, biological, and cultural setting; water quality status; pollutant sources; and recent pollution control actions in South Fork Coeur d'Alene Subbasin located in the Idaho Panhandle. The first part of this document, the subbasin assessment, is an important first step in leading to the TMDL. The starting point for this assessment was Idaho's current 303(d) list of water quality limited water bodies. Fourteen segments of the South Fork Coeur d'Alene Subbasin were listed on this list for sediment. The subbasin assessment portion of this document examines the current status of 303(d) listed waters, and defines the extent of impairment and causes of water quality limitation throughout the subbasin. The loading analysis quantifies pollutant sources and allocates responsibility for load reductions needed to return listed waters to a condition of meeting water quality standards.

Subbasin at a Glance

Hydrologic Unit Code.....….. 17010302
Water Quality Limited Segments..…..... 14
Beneficial Uses Affected....… Cold Water
Pollutants of Concern…….Sediment
Metals
Known Land Uses……...... Forestry, Mining, urban-suburban

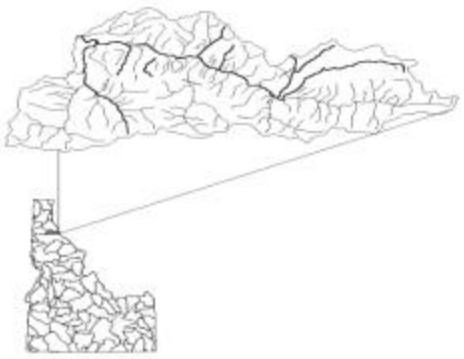

Figure A. South Fork Coeur d'Alene River Subbasin location and listed segments.

Key Findings

The South Fork Coeur d'Alene River watershed is the center of the Coeur d'Alene Mining District. The watershed has been developed for the extraction of minerals and is the residence of a large population engaged in the mining and refinement of metals. Streams are 303(d) listed for metals and sediment. The trace (heavy) metals impacts to water quality have been addressed in the Coeur d'Alene Basin Metals TMDL (DEQ – EPA 2000). Sediment is listed as a pollutant for 14 stream segments of the watershed. Sediment has its source in mine waste piles, urban land use; road erosion; encroachment on stream channels and floodplains; and the encroachment of towns and mining facilities. Impairment of the cold water use has been demonstrated in the low diversity of macroinvertebrates and low trout abundance. These impacts are the result of both metals and sediment. Impacts of the two pollutants are not easily differentiated. However, the impaired segments of the South Fork subbasin typically have low residual pool volumes as compared to segment supporting high trout abundance. These data indicate sediment is filling pools.

The sediment yield of the subbasin was modeled. The sediment yield was modeled at 52% above background exceeding the 50% above background benchmark above which water quality impairment may occur. Many sub-watersheds were considerably higher (75-237%) than the whole subbasin. The model results were lower than in-stream measurements made for the Superfund remedial investigation. These in-stream measurements were made while remedial work was underway in the streams. The model accounted for erosion features recently remediated. It is likely that in-stream sediment flux has not equilibrated with changes in sediment yield during the past six years. The permitted sediment discharges accounted for 0.8% of the sediment load, but are allocated 7%. The model results support the impairment of Canyon, Ninemile-East Fork Ninemile, Pine-East Fork Pine Creeks, Government Gulch and the South Fork Coeur d'Alene River below Canyon Creek. The unknown pollutants of the East Fork Ninemile Creek are determined to be sediment and the metals, cadmium, lead, and zinc. The fish density, residual pool volume, and modeled sediment yield do not support the listings of Moon Creek.

A sediment TMDL was developed for the South Fork Coeur d'Alene Subbasin. The TMDL encompasses Canyon Creek, Ninemile-East Fork Ninemile Creeks, Government Gulch, Pine-East Fork Pine Creeks and the South Fork from the Canyon Creek confluence to the mouth. The TMDL is stated in tons of sediment per year even though sediment yield and transport is erratic and episodic over a time span of years. The TMDL suggests residual pool volume as a surrogate measure of sediment for purposes of implementation planning and monitoring. Pool filling is the mechanism through which the sediment impacts the cold water uses. The TMDL sets loading capacity at sediment yield 25% above background based on the sediment yield of basins fully supporting the cold water uses (Upper South Fork, Big Creek, and Montgomery Creek that are between 15% and 19% above background. The loading capacity was raised slightly to account for infrastructures like Interstate 90, Wallace and Kellogg that cannot be removed. Watersheds in the subbasin have sediment yield near 25% and fully support cold water use (Placer Creek). The model used to develop sediment yield has conservative assumptions for the Belt terrain that provide a large implicit margin of safety (231%). The background is made a part of the allocation to account for any unidentified

sources of sediment. Point discharges permits account for 7% of the sediment that could be discharged. This is fine sediment that would not cause pool filling and affect the cold water uses. Since the permitted sources do not discharge at levels remotely comparable to currently permitted loads, waste load allocation is provided at the level 10% less than current permitted discharges by recommended decreases in the water discharge levels. From the 10% trimmed from the permitted discharges, a waste load reserve for future development of 47 tons per year is created. The load allocation was based on the percentage of forestland, mined land, urban-suburban, and highway uses. For purposes of load allocation, it was assumed that encroaching roads and mine facilities are proportionally distributed to the land area of these uses. Full support of the cold water use is expected fifteen years following implementation in the tributary streams (Canyon Creek, Ninemile-East Fork Ninemile Creeks, Government Gulch, Pine-East Fork Pine Creeks) and thirty years following implementation in the South Fork Coeur d'Alene River. A CERCLA remedial action is planned to address mining impacts in the watershed, while 51% of the watershed is managed by federal agencies. The CERCLA actions must address the TMDL as an applicable regulatory requirement assuring sediment as well as metals is addressed. Federal land management actions make sedimentation reduction a priority. These actions will provide reasonable assurance that the load allocations will be implemented. Once full support of the beneficial use is achieved the water body(s) would be delisted for sediment.

The TMDL package went out for public review and comment on December 26, 2001 for a thirty-day period. The comment period was public noticed in three local papers. The TMDL package was placed in three libraries identified in the public notices and the documents were made available electronically on the DEQ and Coeur d'Alene Basin Citizens' Advisory Committee (CAC) web sites. Upon request of three groups the comment period was extended an additional thirty-days to February 27, 2002. During the comment period public meetings to discuss the TMDL package were held with Shoshone Natural Resource Coalition Science Committee (January 7, 2001), CAC (January 9, 2001) and the Panhandle Basin Advisory Group (January 15, 2001). At the end of the comment period eight letters of comment were received which contained 87 distinct substantive comments. The comment resulted in 29 separate revisions of the subbasin assessment and TMDL. A responsiveness summary of the comment was developed and letters of response sent to all, who commented.

A comment requested development of a reserve in the waste load allocation to account for future development. A reserve of 27 tons per year and 1.55 MGD was developed by a 10% reduction in the allocated waste load to the current permitted discharges. A white paper on the reserve creations was sent to the permit holders on March 29, 2002 (Appendix D). A meeting on the issue was held with the permit holders on April 4, 2002. At the meeting and in two written communications the permit holders understood the value of a reserve to provide flexibility to the Silver Valley economy. Permit holders did voice some concern that the volume of their discharge would be curtailed up to 10% from existing permit limits.

Table A. Streams and pollutants for which TMDLs[1] were developed.

Water Body Name	Segment ID Number	1998 303(d) Boundaries	Pollutants
SF Coeur d'Alene River	3516	Canyon Ck to Ninemile Ck	Sediment
SF Coeur d'Alene River	3517	Ninemile Ck to Placer Ck.	Sediment
SF Coeur d'Alene River	3518	Placer Ck. To Big Ck.	Sediment
SF Coeur d'Alene River	3513	Big Ck. To Pine Ck.	Sediment
SF Coeur d'Alene River	3514	Pine Ck. To Bear Ck	Sediment
SF Coeur d'Alene River	3515	Bear Ck. To Coeur d'Alene R.	Sediment
Canyon Creek	3525	GorgeGulch. to SF Cd'A River	Sediment; Habitat Alt.
Ninemile Creek	3524	Headwaters to SF Cd'A River	Sediment
EF Ninemile Creek	5618	Headwaters to Ninemile Ck.	Unknown (sediment)
Government Gulch	5084	Headwaters to SF Cd'A River	Sediment
EF Pine Creek	3520	Headwaters to Hunter Ck.	Sediment
EF Pine Creek	3521	Hunter Ck. To Pine Ck	Sediment
Pine Creek	3519	EF Pine Ck to SF Cd'A River	Sediment

[1]Total Maximum Daily Loads

Table B. Summary of assessment outcomes.

Water Body Segment	Pollutant	TMDL(s) Completed	Recommended Changes to 303(d) List	Recommended Schedule Changes	Justification
SF Coeur d'Alene River 17010302-3516	Sediment	1	None	None	N/A
SF Coeur d'Alene River 17010302-3517	Sediment	1	None	None	N/A
SF Coeur d'Alene River 17010302-3518	Sediment	1	None	None	N/A
SF Coeur d'Alene River 17010302-3513	Sediment	1	None	None	N/A
SF Coeur d'Alene River 17010302-3514	Sediment	1	None	None	N/A
SF Coeur d'Alene River 17010302-3515	Sediment	1	None	None	N/A
Canyon Creek 17010302-3525	Sediment	1	None	None	N/A
Ninemile Creek 17010302-3524	Sediment	1	None	None	N/A
EF Ninemile Creek 17010302-5618	Sediment	1	List for sediment and metals	None	N/A
Moon Creek 17010302- 5127	Sediment	None	Delist for sediment	None	Trout density, residual pool volume and modeling indicate full support of cold water use
Government Gulch 17010302-5084	Sediment	1	None	None	N/A
EF Pine Creek 17010302-3520	Sediment	1	None	None	N/A
EF Pine Creek 17010302-3521	Sediment	1	None	None	N/A
Pine Creek 17010302-3519	Sediment	1	None	None	N/A